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The exploration of Body-Worn Video to accelerate the decision making skills of Police Officers within an experiential learning environment.

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Abstract

Previous research has highlighted benefits of Body-Worn Video (BWV) to support the work of police officers. The daily demands of policing requires officers to make highly pressurised decisions (with associated rapid action) in unpredictable changing environments. It is important that new officers learn techniques of decision making in a safe and controlled way, which minimises the risk and harm to all parties whilst at the same time facilitating effective learning. Whilst the benefits of experiential and immersive learning characterised by active participation have long been used in related professional disciplines, the application to police education has been under explored. BWV can be used to identify decision making cues from the environment and nurture pattern recognition, essential to the development of mental models within the officer's decision making process. The paper will therefore explore the application of BWV in the context of experiential immersive learning to accelerate police officers decision making.

Keywords: Body Worn Video cameras, decision making, immersive learning environments, training, reflective practice;

51 **Introduction**

52 Since 2012 there has been a surge of interest into the use and application of Body Worn
53 Video (BWV) cameras into the context of modern policing (Lum, Koper, Merola, Scherer &
54 Reioux 2015). The introduction of such sophisticated technological advancements combined
55 with extensive media interest (Ariel, Farrar & Sutherland, 2015) has therefore intensified the
56 deliberations surrounding BWV and the role they can play in influencing the public
57 perception of the police and other emergency services (Culhane, Bouman & Schweitzer 2016;
58 masonadvisory, 2015). According to Custers and Vergow (2015) there is very little robust
59 evidence regarding the effectiveness of using technologies in policing; as very few evaluative
60 studies are being embarked on. However, body worn cameras are associated with
61 “instruments for accountability and an effective way of reducing violence, discrimination or
62 corruption” (Coudert, Butin and Le Métayer 2015: 749). Whilst some authors highlight the
63 potential for body worn cameras to reduce the use of force and limit abuse (Ariel, Farrar and
64 Sutherland 2015), reduce the numbers of stop and search and make subsequent arrests (Ready
65 and Young 2015) and may result in a greater willingness amongst the public to report crime
66 (Ariel 2016); through a range of studies all conducted in the United States of America. Other
67 writers (Grossmith, Owens, Finn, Mann, Davie & Baika 2015) found that compliance with
68 activating body worn cameras by officers was relatively poor, and was associated with
69 increased likelihood (Grossmith, et al, 2015) of officers to arrest; and seemingly no impact in
70 terms of increased incidence of resisting arrest (Katz et al 2015). Furthermore, Rieken (2013)
71 asserts that officers may lose the discretion that comes as part of interpreting a situation
72 resulting in mechanistic performance. Whilst these studies are important, education and
73 training of officer recruits is not the main aim of this body of work indicating the need for
74 further focused research.

75 To date the relevance and impact of BWV has not been fully considered and realised within
76 the police training environment. However, experience from members of the research team

recognises that certain aspects of synthetically created environments have been in existence for some time and have been successfully used in other contexts. For examples HYDRA suites for Senior Investigating Officers training and Simunition simulators are used predominantly with firearms training. Although these environments are valuable they are designed around the creation of simulated environments and they do not have the interactive elements of the artificial intelligent platforms. Research on integrating BWV has only been tentatively explored with two RCT's (Owens et al. 2015; Grossmith et al. 2015) based in the UK, highlighting some potential for continuing professional development when officers have access to BWV footage. Within these two trials the pedagogical underpinning of the mechanism by which such development takes place is sketchy. Currently within police training, the emphasis of the use of BWV has focused on the capture and presentation of evidence in court cases.

While the emphasis of discussions surrounding BWV has focused on increasing the accountability of officers in response to meeting operational demands, other perceived benefits have received less attention. It has been recognised that BWV can provide the additional operational benefits (Grossmith et al. 2015) and facilitate the gathering of evidence through the automated recording of incidences in which officers attend; resulting in a reduction of police use of force (Ariel et al, 2015). In a guidance document Goodall (2007) suggests that in some cases the footage garnered through body worn cameras can facilitate the support of reluctant witnesses in domestic abuse cases. Although a more recent randomised controlled trial indicated increasing proportions of detecting domestic violence but no impact on arrest rates and subsequent sentencing. Although the complexity of integrating BWV into the strategic and organisational structure of police forces is multifaceted and still very much in its infancy, limited attention has been directed towards the benefit of using BWV in a training environment with the specific aim of helping to accelerate the decision making capabilities of police officers. White (2014) points out that examples of body worn cameras in providing opportunities for police training remain largely anecdotal and untested. Although,

104 Goodall (2007) provides some advice outlining the training officers require, regarding
105 technical and practical aspects of using the equipment; he does not go on to consider how
106 body worn camera footage could be used to enhance officer performance; suggesting that
107 there may be a subconscious improvement in officer awareness when they view their own
108 practice (Goodall 2007). The capturing of officers decision making in training situations from
109 the first person's perspective, provides a unique opportunity for officers to engage with
110 experiential learning in a safe and controlled environment. This paper explores the
111 integration of BWV cameras into police training environments to accelerate the development
112 of naturalistic decision making skills in officers. The paper therefore begins by presenting an
113 overview of naturalistic decision making and the challenges faced by officers as they
114 undertake their role in an unpredictable, highly pressurised environment which is continually
115 changing. For the purpose of this paper naturalistic decision making is the term used to
116 outline the investigation of experts in dynamic environments which are uncertain, and are
117 continually changing (Klein, 2008). Such environments are complex and are characterised as
118 containing ill structured problems; shifting, or competing goals; multiple event-feedback
119 loops; time constraints; high stakes; multiple players, organisational norms and goals that
120 must be balanced against the decision-maker's personal choice (Richards et al, 2009). Such
121 characteristics typify the challenging environment of modern day policing. The paper then
122 explores how BWV can be integrated into the training environment of officers, whereby key
123 models and other mechanisms used to support police decision making (College of Policing
124 National Decision Making Model, 2013 and THRIVE) can be embedded into a naturalistic
125 decision-making framework to accelerate the development of decision making skills in
126 officers and new recruits. The paper will then briefly explore how BWV can be combined
127 with other technological advancements (oculus rift, virtual dome environments etc) to create
128 an active experiential immersive learning environment, enabling officers to develop
129 associations between cognitive decision making skills and rapid physical actions in a safe and
130 harm free setting. It is envisaged the paper will open discussion as to how policing

practitioners and researchers can design safe and controlled training environments which maximise the transfer of learning to real life situations.

Naturalistic Decision Making Skills and the Police Officer

This commentary paper proposes that the nature of decision making performed by police officers lends itself to the Naturalistic Decision Making paradigm, where decisions are undertaken in highly pressurised, complex and unpredictable circumstances, where time is a key determinant (Klein, 2008). For officers, such environments also include the added complexity of involving multiple individuals. Decision making processes in such a dynamic and continually changing environment requires the integration of perceptual skills and the considerations of situational factors (Richards, Collins & Mascarhenas, 2016). The design and development of training environments therefore needs to include the development of cue driven perceptual skills relating to the real world context in which the officers may find themselves. Developing the perceptual cues of officers in isolation to the situation could result in the incorrect decision being made when training is transferred to real world settings.

Research from several domains, sport being one, has enhanced our understanding of decision making processes in highly pressurised situations (Starkes & Ericson, 2003; Williams, 2009; cf. Bar-Eli, Plessner, & Raab, 2011; Richards, Collins, & Mascarenhas, 2012). Richards et al (2016) proposed two interconnected models within one framework which addresses the development of decision making skills in highly dynamic and pressurised environments. Although originally designed for the development of decision making skills in elite sport the framework is being explored in the context of developing decision making skills in police recruits on the Isle of Man. Model 1 in the empirically tested framework (see Richards et al, 2016 for review) outlines how important information relevant to real world contexts can be pedagogically layered. This first model integrates the individual's knowledge, situational factors and the context of the setting in which the individual is making the decision. The

second part of the framework illustrates how integrating reflective (slow deliberation) training environments within scenario based settings (Richards et al, 2012) can result in the facilitation of accelerated decision making skills, through the process of layering the information. There has been a considerable body of research illustrating that slow deliberate learning which occurs in an experiential scenario based video environment can accelerate the decision making skills in highly pressurised naturalistic field settings (Richards et al, 2009; 2012; Merola & Richards, 2010; Bates & Richards, 2011 and Richards, Penrose & Turner, 2015). The slow deliberate video based learning environment empowers individuals to construct specific mental models in the context of their own performance. Within the mechanism advocated here, the beginner or less experienced recruit can learn from and have access to the mental model of the more experienced officer as they both watch footage of a situation together.

Through the observation of video recorded from BWV officers (individual officers or a specialist team of officers) it is proposed that officers can engage in deliberate, structured discussions. Such engagement empowers the officers (individually or collectively as a team) to identify key features and important aspects of the clip, which results in the formulation of individual or shared mental models (Richards et al, 2012; Richards et al, 2016). Westbrook (2006) highlighted that mental models are only valuable to the individuals who construct them; indicating that everyone is required to construct their own mental model. Focused discussion between individuals can therefore make mental models accessible resulting in more effective engagement when similar situations arise in the future (cf. Mascarenhas, Collins, Mortimer, & Morris, 2005). The connection between the empowered slow deliberate learning environment and the applied real world context (where decision are made in real life situations) is evident in the model through an interacting pair of feed-forward and feedback mechanisms (Richards et al, 2016). Feedback discussion features aspects of what was completed well; whereas feedforward discussions focus on what needs to be incorporated into future actions if a similar situation arises.

The authors of this paper therefore proposed that footage captured from BWV could be integrated within the decision framework proposed by Richards et al (2016) enabling training officers to apply specific police decision making models (THRIVE and NDM) to enhance the decision making skills of officers when on patrol.

Developing a video based learning environment to facilitate Decision Making Skills in Police Officers

Effective teaching should enable students to assimilate new knowledge into existing cognitive structures (Andrews & Roberts, 2003). Simulated or immersive learning environments enable students to do so through active participation. Such simulated immersive learning environments are being used in a range of associated professional disciplines such as medical and nurse education to enable students to observe, rehearse and practice in an approximation of the real world. Through immersion in scenario based learning encounters, students are enabled to draw on all of their senses to facilitate decision-making in real time (Roberts & Roberts, 2014). Typically simulation features active participation by the learner followed by structured de-briefing with an expert or skilled facilitator where meaning and sense making can be achieved.

The process of sense making facilitates the officer moving beyond the identification and comprehension of environmental cues which are being discussed and the trainee officer is encouraged to *frame* or comprehend the cue in relation to the situation. Sense making therefore would facilitate the trainee officer establishing connections and associations between environmental cues. Such an empowered, slow deliberate process of sense making results in the development of the individual's own mental model or internalised plan (Richards et al, 2012; 2012), which in turn can be used to inform and shape actions in future situations (Bates & Richards, 2011).

209 Whilst active participation in a learning environment is important; there is a growing
210 recognition that individuals can also learn vicariously through the experiences of others; being
211 able to listen to experts as they discuss a new topic, enables students to learn through such
212 active discussion (Roberts, 2010). (Although it is recognised that this is often dependent on
213 the skills of the teacher in facilitating learning.) Utilising BWV footage captured either
214 through everyday work or through judiciously selected and recreated simulated scenarios
215 ensures that the stimulus for learning is rooted in the real world of policing, where the
216 knowledge on which professionals draw is broad, deep and multi-faceted; moreover, the
217 problems which professionals face are not straightforward, rather they are complex and messy
218 (Schon, 1987). We postulate that as the experienced officer and the beginner watch the BWV
219 footage together they can focus their discussion on the environmental and embodied cues
220 (data points) that the expert experienced officer has identified to frame (or contextualise) the
221 situation. As the discussion unfolds, the beginner is given access to the mental model of the
222 experienced officer as their craft knowledge is shared. This craft knowledge can then be used
223 to inform future action of the novice officer, when they are confronted with a similar real
224 world situation.

225 It is proposed that the integration of BWV footage into learning environments combined with
226 engagement in structured conversations (empowered slow deliberate learning) between expert
227 or experienced officer and less experienced, or those at the beginning of their police careers
228 could accelerate decision making skills. We believe there is a potential that real world police
229 decision making can be accelerated and enhanced through such approaches. Furthermore, the
230 initial work being undertaken in this field of inquiry warrants closer attention.

231 **Conclusion and moving to the next step**

232 In conclusion, BWV footage could be integrated into simulated training environments which
233 are specifically designed to accelerate the decision making skills of police officers. The
234 integration of structured discussions between expert or experienced officers and those at the

235 beginning of their careers facilitates a slow deliberate empowered learning environment that
236 creates the opportunity for officers to explore highly pressurised situations but in a controlled
237 and risk free setting. The structuring of the video based learning environment would
238 empower the officers to develop effective mental models of decision making which relate to a
239 specific policing context (e.g. drunk and disorderly). Integrating BWV into a simulated and/or
240 immersive learning environment facilitates officers being able to identify and prioritise
241 environmental cues and contextualise (frame) this visual information in context of the real life
242 situations which they may find themselves.

243 The challenge for policing practitioners and researchers is therefore to integrate emerging
244 technology into specifically designed and constructed training environments which are free
245 from harm, maximise and accelerate decision making skills in officers but which are
246 economically viable. There is potential to use a range of emerging technologies in
247 conjunction with BWV footage to create such a learning context. Eye tracking technology
248 would generate an understanding of the search patterns or ability to ‘read the scene’ of expert
249 officers when they are attending an incident (scenarios created in a training context). Such
250 information could be useful in providing a framework for understanding how expert officers
251 think. The use of BWV could also be integrated with single user digital technology platforms
252 such as Oculus Rift (a head mounted display, that exposes its wearer to a bespoke interactive
253 360-degree immersive environment, deployed using virtual reality) providing the benefits of
254 learning in a harm free environment; and which enable the learner to repeatedly encounter
255 training situations in order to refine their response. Finally, the construction of immersive
256 learning environments, such as 3D virtual domes (an enclosed 360 degree interactive
257 environment where a range of environments can be projected using conventional game
258 development techniques to produce 3D digital content) (Roberts & Roberts, 2014) could be
259 used to facilitate the development and collaboration of team decision making skills between
260 officers, as multiple individuals can engage in scenario based training collectively in risk free
261 training context.

It is hoped that this paper may open discussion as to how BWV can be integrated with video based /immersive learning environments; whereby empowering officers to engage in slow deliberate learning processes can accelerate the development and acceleration of decision making skills which are transferable to real life situations.

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